

1. A process for preparing monodisperse anion exchangers comprising

- (a) reacting monomer droplets made from at least one monovinyl-aromatic compound and at least one polyvinylaromatic compound to give a monodisperse, crosslinked bead polymer,
- (b) amidomethylating the monodisperse, crosslinked bead polymer from step (a) with a phthalimide derivative,
- (c) converting the amidomethylated bead polymer from step (b) to an aminomethylated bead polymer, and
- (d) alkylating the aminomethylated bead polymer from step (c).

2. A process according to Claim 1 wherein the monomer droplets are microencapsulated using a complex coacervate.

3. A process according to Claim 1 wherein step (a) is carried out in the presence of a protective colloid.

4. A process according to Claim 1 wherein step (a) is carried out in the presence of at least one initiator.

5. A process according to Claim 1 wherein the monomer droplets comprise porogens that, after the polymerization, form macroporous, crosslinked bead polymers.

6. A process according to Claim 1 wherein a polymerization inhibitor is used in step (a).

7. A process according to Claim 3 wherein the protective colloids are gelatin, starch, polyvinyl alcohol, polyvinylpyrrolidone, polyacrylic acid, polymethacrylic acid, copolymers made from (meth)acrylic acid or (meth)acrylate, or mixtures thereof.

8. A process according to Claim 1 wherein the monovinyl-aromatic compounds are monoethylenically unsaturated compounds.

9. A process according to Claim 1 wherein the polyvinyl-aromatic compounds are divinylbenzene, divinyltoluene, trivinylbenzene, divinyl-naphthalene, trivinyl-naphthalene, 1,7-octadiene, 1,5-hexadiene,

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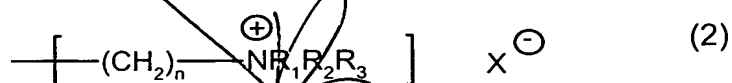
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10. A process according to Claim 1 wherein the initiator is a peroxy compound or an azo compound.
- 5 11. A process according to Claim 10 wherein the initiator is dibenzoyl peroxide, dilauroyl peroxide, bis-(p-chlorobenzoyl) peroxide, dicyclohexyl peroxydicarbonate, tert-butyl peroctoate, tert-butyl peroxy-2-ethyl-hexanoate, 2,5-bis-(2-ethylhexanoylperoxy)-2,5-dimethylhexane, or tert-amylperoxy-2-ethylhexane,
- 10 12. A process according to Claim 10 wherein the initiator is 2,2'-azobis(isobutyronitrile) or 2,2'-azobis-(2-methylisobutyronitrile).
13. A process according to Claim 1 wherein a phthalimido ether is formed in step (b).
- b 12 14. A process according to Claim 13 wherein the phthalimido ether is prepared from phthalimide or from a derivative thereof and formalin.
15. A process according to Claim 13 wherein the reaction of the phthalimido ether with the bead polymer takes place in the presence of oleum, sulfuric acid, or sulfur trioxide.
- 20 16. A monodisperse anion exchangers prepared by a process according to Claim 1.
17. A monodisperse anion exchangers according to Claim 16 having a macroporous structure.

18. A monodisperse bead polymer according to Claim 16 having the functional groups



or



wherein

R_1 is hydrogen, an alkyl group, a hydroxyalkyl group, or an alkoxyalkyl group,

R_2 is hydrogen, an alkyl group, an alkoxyalkyl group, or a hydroxyalkyl group,

R_3 is hydrogen, an alkyl group, an alkoxyalkyl group, or a hydroxyalkyl group,

n is an integer from 1 to 5, and

X is an anionic counterion.

19. A process comprising removing anions, color particles, or organic components from aqueous or organic solutions or condensates with a monodisperse anion exchanger according to Claim 16.

20. A process comprising purifying and treating water in the chemical or electronics industry with a monodisperse anion exchanger according to Claim 16.

21. A process comprising deionizing aqueous solutions and/or condensates with a monodisperse anion exchanger according to Claim 16 in combination with a gel-type and/or macroporous cation exchanger.

22. An ion exchange combination comprising a monodisperse anion exchanger according to Claim 16 and a gel-type and/or macroporous cation exchanger.

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